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COVER STORY

In order to stay competitive, U.S. food companies are investing abroad. Photo by Arthur Myerson.

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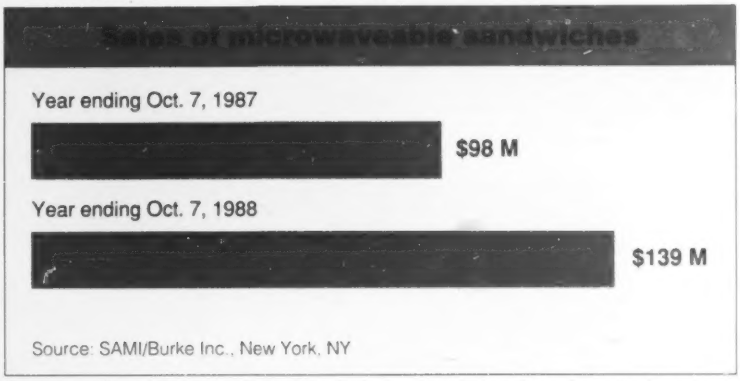
Growth of microwaveable sandwich category lures new products


Sales of microwaveable sandwiches
Year ending Oct. 7, 1987
$98 M
Year ending Oct. 7, 1988
$139 M
Source: SAMI/Burke Inc., New York, NY

As convenience foods and grazing become popular, sales of product such as microwaveable sandwiches are growing at a rapid rate.

A little over a year ago, the *Wall Street Journal* ran an article entitled, "Glamour of Upscale Frozen Foods Fades as Buyers Return to Basics." The article pointed out that while sales of premium frozen entrees were declining, cheaper and simpler frozen foods were making a come back. During the nine months after the article appeared, sales of frozen microwaveable sandwiches increased significantly. This category, which doesn't include breakfast sandwiches, reached $139 million in sales for the year ending October 7, 1988, reports SAMI/Burke Inc., a New York City-based marketing research firm. This was a 42.3 percent increased over the previous year.

The success of products such as J.R. Simplot's *MicroMagic* chicken sandwiches and hamburgers, Geo. A. Hormel's *New Traditions* microwaveable sandwiches and Campbell Soup's *Super Combo* line has lured more players into the arena.

Currently, Chicago-based Quaker Oats Company is test marketing *Old Town Oven Stuffs Microwaveable Deli Sandwiches* in Cleveland, Denver and Pittsburgh.

Another Chicago-based food manufacturer, Pitaria Products Co., introduced *Pita Stuffs*—a line of frozen, microwaveable pita-bread sandwiches—in the fall of 1988. Pita Stuffs come with four different fillings—gyros, ham and cheese, pizza or taco. A package of two retails for $2.59.

Mini Burgers, from Jimmy Dean Meat Company of Dallas, TX, is a new line of microwaveable, bite-size burgers with buns. These precooked burgers are made with 100 percent beef. They are refrigerated but can also be frozen.

Chicken sandwich also microwaveable

Tyson Foods, Inc., Springdale, AK, has added *Microwave Chicken Sandwiches* to its offerings. The 4.25 ounce chicken sandwich is coated with a southern fried breading and comes on a kaiser roll.

A 4.4 ounce offering contains two smaller mini sandwiches which have conventional buns. These sandwiches were formulated for microwave-only preparation. Shipments to retailers began September 1, 1988.

In homes, the microwave oven dominates the convenience food trend, according to a study on National Eating Trends (NET) offered by NPD, Park Ridge, IL. The study also points out that two-thirds of all households now use a microwave at least once every two weeks—an increase of about 10 percent over the previous year. In addition, the microwave has become the second most frequently used cooking appliance (after stove top), surpassing oven usage.

With more Americans turning to the "heat and run" method of food preparation, microwaveable sandwiches should continue to meet with success.

Salt-free hot sauce is new

Lang's Tangy Bang Sauce is an all natural hot sauce, formulated without salt. Available from Lang Naturals, Warwick, RI. this sauce contains: apple cider vinegar, honey, ginger puree, garlic juice, onion juice, carrot juice, horseradish, cayenne peppers, natural herbs and spices, natural flavors, and natural vegetable gum.

Tangy Bang Sauce is recommended for use with meats, poultry, pasta and seafoods. In addition this natural hot sauce can be used in soups, salads, stirfry dishes, Bloody Marys and a variety of other foods. A free recipe offer is included on the label. The suggested retail price for a 5-fluid ounce bottle is $2.59.

Wild lingonberry juice now offered in the U.S.

Nordia juices from Scandinavia are being imported to the U.S. *Wild lingonberry juice* has been available in gourmet shops, health food stores and Scandinavia shops for about eight months now.

Wild Lingonberry Juice has no preservatives, and only grape juice is added for sweetness. Lingonberries are grown in the forest of the northlands of Scandinavia. Several months ago, Natural Products of Scandinavia, Riverside, CT, also began importing *Black Current Juice*.

Ralston Purina adds four new P/L foods

Ralston Purina Company, St. Louis, MO, has launched four new private label products—*Bite-Size Snackers, Crackerdiles, Nutty Nuggets* and *Magic Stars*. Bite-Size Snackers are miniature size and are designed to compete with *Ritz Bits* crackers. Crackerdiles are crocodile shaped, bite-size crackers made with cheddar cheese.

Nutty Nuggets are made from wheat and barley and have no added sugar. To compete with popular children's cereals, Magic Stars are presweetened and contain colorful marshmallows. Each of the four new products has proven through consumer tests to be equal or superior to its brand name competitors, according to the manufacturer.

Food Plants Abroad: U.S. Global Strategy

Foreign investment is the major strategy employed by U.S. food companies to boost international sales. Top competitive tool: the overseas plant.

Competitiveness is the current buzzword concerning America's role in the global marketplace.

Everyone agrees that we must improve our international competitiveness but nobody knows how to measure it. "Most equate competitiveness with trade," observed Dr. Charles R. Handy of USDA's Economic Research Service (ERS) at the annual meeting of the Food Distribution Research Society, October 24 in Houston. "But especially in food processing, one must look at the total foreign presence of U.S. firms in addition to international trade when evaluating competitiveness."

ERS is now studying the international operations of 57 major U.S. food processors whose 1986-87 sales were $147 billion, or 48 percent of all U.S. food processing sales. These 57 firms exported only $3.3 billion worth of products, or 2.8 percent of their total sales. But "export statistics, by themselves, greatly understate the foreign presence of U.S. food processors," said Handy. "Rather than rely on exports, it appears that large food processors use foreign investment as the major strategy for gaining sales in international markets."

As shown in the accompanying table, the 57 firms operate a total of 2,503 processing plants – 74 percent in the U.S. and 26 percent abroad. Thirty-six of the 57 companies own food processing plants in foreign countries. Sales from these foreign plants accounted for 20 percent of total processed

CHARLES E. MORRIS
Midwest Editor

Korea symbolizes the company's presence in 155 countries. Coke derives 65 percent of sales, and 77 percent of soft-drink operating income from foreign operations. (Photo: Arthur Myerson.)

Firms	Total plants	U.S.	Foreign	Percent foreign
	Number			Percent
CPC International	112	29	83	74
Ralston Purina	123	57	66	60
RJR/Nabisco	170	123	47	28
Kraft	96	52	44	46
Philip Morris (G.F.)	103	60	43	42
Heinz	63	25	38	60
Quaker Oats	65	31	34	52
Campbell Soup	87	59	28	32
Borden	153	127	26	17
Pepsico	115	91	24	21
ConAgra	150	127	23	15
International Multifoods	45	24	21	47
Sara Lee	67	47	20	30
McCormick	52	32	20	38
Coca Cola	63	48	15	24
Kellogg's	37	22	15	41
Pillsbury	77	63	14	18
Staley Continental	56	44	12	21
General Mills	47	35	12	26
Castle & Cooke	47	36	11	23
Wm. Wrigley	17	6	11	65
Archer Daniels Midland	122	113	9	8
Anheuser Busch	86	77	9	10
Hershey's	20	12	8	40
Procter & Gamble	23	16	7	30
IC Industries (Pet)	50	45	5	10
United Brands	25	20	5	20
Gerber Foods	6	4	2	33
Brown Forman	7	5	2	29
Curtice-Burns	29	27	2	7
Hormel	23	22	1	4
Wilson Foods	12	11	1	8
American Home Products	5	4	1	20
Flowers	35	34	1	3
Clorox	4	3	1	25
American Brands	14	13	1	7

Source: Company annual reports and form 10-K reports; USDA

food sales for the 57 firms. Two companies—CPC International and Coca-Cola—generate more than 50 percent of their sales from foreign operations. Nine firms achieved between 30 and 50 percent of their sales from foreign subsidiaries, ten others between 15 and 29 percent.

Yet even sales from foreign subsidiaries understate the international presence of U.S. food processors, Handy continued. "Most U.S. food processors do not include licensing and joint-venture operations in reporting their foreign sales," Handy pointed out. "For example, many brewers—including Miller's and Coors—license Canadian firms to produce their brands in Canada." This avoids the costs of establishing foreign subsidiaries. U.S. food processors are also increasingly developing joint ventures, especially in socialist and communist countries where it's the only way to do business. Examples: Heinz and RJR Nabisco recently set-up joint food processing ventures in China.

Behind the trade barriers

Reasons why most of the companies studied prefer to produce abroad rather than export, said Handy:

- To avoid tariff and most non-tariff trade barriers.
- To reduce transportation costs, especially where consumer packaging adds weight.
- To ease relationships with foreign governments and compliance with local regulatory agencies. "U.S firms find it easier...when the product is produced in the host country."
- To keep abreast of local tastes and opportunities for new product development.
- To expand, using acquisition of established brands and manufacturing facilities as a base for expansion.
- To improve access to local marketing and distribution services.
- To expand a market developed through exports. Example: CPC International started-up a Chilean plant in 1986 to produce *Heilman* mayonnaise (and other products), formerly exported to that country but which had achieved market success to the point where it became more profitable to produce locally. "The paradox here is that the very success and growth of an export market led to its elimination," Handy observed. "This is another example of how foreign trade data can be a misleading measure of 'competitiveness.'"

However, it is still true that while large food processors are not major exporters, hundreds of smaller and medium-size processors have opportunities to identify and develop export markets for specialty products and to serve niche markets too small to attract the big guys, Handy continued. "Sun-Diamond Growers, Tri/Valley Growers, Welsh Foods, Smucker's and Thorn Apple Valley are examples of medium-size firms which have aggressively developed export markets," he pointed out.

Repositioning for '92

While the reasons for producing in foreign markets are largely marketing-related, big U.S. processors are aggressively trying to boost productivity in their foreign subsidiaries to become the low-cost producers in their host countries, Handy continued. "The scheduled removal of all internal trade barriers in the European Community in 1992

provides opportunities to obtain further economies of scale in European-based plants," he added.

U.S. food processors operating in Western Europe are already repositioning themselves for better access to the 320 million Common Market consumers by 1992. H. J. Heinz Chairman & CEO Dr. Anthony J. F. O'Reilly strongly hinted to shareholders at the company's annual meeting, September 7 in Pittsburgh, that Heinz might consolidate Western European production of certain products to gain manufacturing efficiencies when trade barriers fall. Last year, after Spain's entry into the EEC, Heinz acquired Orlando S.A. – a leading Spanish producer of tomato products, canned vegetables and fish – and Marie Elisabeth, a Portugese fish canner. Heinz also owns IDAL, a Lisbon-based tomato processor. "It is not inconceivable to think that in the mega-market of post-1992, all our ketchup in Europe could be sourced from one single location – perhaps Spain or Portugal," said O'Reilly. "It is not inconceivable that we will develop one single seafood location for the European market. It is not inconceivable that Heinz-U.K. – if it achieves revised production and cost targets – will become the major Heinz manufacturing location for recipe foods for all of Western Europe."

Coca-Cola, world champion among U.S. food/beverage processors with operations in 155 countries, is also repositioning for 1992. Foreign operations generate 65 percent of Coke's sales, 77 percent of soft drink operating income. "Recognizing that our organization does not determine how we deal with the world but that the world determines how we should organize ourselves," Chairman & CEO Roberto C. Goizueta announced on October 20 the reorganization of Coke's worldwide soft-drink structure into four operating groups from three, effective January 1. The newly-formed Coca-Cola EC Group consolidates operations in the 12-nation European Community under single management. A second new group, Northeast Europe/Africa (NEA), covers all non-EC European countries plus Africa and the Middle East. Countries managed by the Pacific Group and the Latin America Group remain unchanged.

International opportunities also influenced the recent $13.1-billion megamerger of Kraft with Philip Morris, which owns General Foods. As reported earlier in *Food Engineering* (November '88), international operations now account for 24 percent of sales and 25 percent of profits at Kraft; General Foods generates about 20 percent of its sales from operations abroad. "We believe the combination of Philip Morris and Kraft will create a U.S.-based food company that will compete more effectively in world food markets," said Philip Morris Chairman & CEO Hamish Maxwell in announcing the acquisition on October 30.

Pillsbury sources shrimp for its food-service operations and *Today's Catch* retail brand from the Far East and Latin America, including the Cachugan plant near Quayaquil, Ecuador (above). Shrimp are raised in a pollution-free environment, then harvested, procesed and frozen on the same day. (Photo: Pillsbury International Trading Group.)

Melvin (Mickey) Kupperman, president of A. Epstein & Sons International (Chicago) and a member of the National Research Council Committee on the Internationalization of U.S. Manufacturing, sums it up: "1992 will have a big impact on rationalizing the number of plants and distribution centers" in Western Europe, says Kupperman. It will allow processors to centralize production of food products which currently vary with national standards of identity and will continue to vary with ethnic tastes, boosting production efficiency. "I expect to see more consolidation of manufacturing," says Kupperman. David G. Owens, president of Owens Strategy Group, a Chicago firm specializing in strategic planning/implementation for food processors, concurs. Owens sees consolidation as "inevitable" though not immediate in every country.

Although existing trade barriers will come down within the EEC, there will still be various tariffs and barriers to U.S. imports, so one might expect a wave of U.S. investment to "jump over the barrier." But according to studies by Dr. John M. Connor, an agricultural economist at Purdue University, tar-

Foreign acquisitions/investments by U.S. food processors 1987*

U.S. Firm	Acquisition/ Investment	Country	Products(s)
Borden, Inc.	Kuntzle Group	W. Germany	Retail bakery chain
	Karl Jaus & Sohne	W. Germany	Bakery products
	Albadoro Spa	Italy	Pasta
	Paty S.A.	Brazil	Pasta
Button Industries	Bon Grain/Colombo	France	Yogurt
CPC International	Garrick Foods Ltd.	U.K.	Flavors, seasonings
	Nutrial S.A.	France	Breakfast foods
	San-Co. S.A.	Brazil	Corn starch products
	Sasoned	Colombia	Spices, colors
	Ubena Co.	W. Germany	Spices, herbs
Campbell Soup Co.	Beeck-Feinkost	W. Germany	Refrig./gourmet food
	S.A. Galettes de Pleyben	France	Cookies
Cargill	General Cocoa-Gerkens Group	Netherlands	Cocoa products
Coca-Cola Co.	Vancouver, B.C., unit of Coca-Cola Bottling Consolidated (N.C.)	Canada	Soft drinks
ConAgra	Kurt A. Becher Gmbh	W. Germany	Feed, grain
Church & Dwight	Volac, Ltd.	U.K.	Feed products
General Cinema	18% of Cadbury Schweppes	U.K.	Beverages
H.J. Heinz	Orlando S.A. (major interest)	Spain	Tomato products
	Pro Pastries	Canada	Bakery products
	Win-Chance Foods	Thailand	Baby foods
Hershey Foods Corp.	Nabisco Brands, Ltd.	Canada	Snacks, confections
IC Industries (Pet)	Facchin Foods, Ltd.	Canada	Pasta
Int'l. Multifoods	(Flour mill)	Venezuela	Corn flour
Pepsico, Inc.	Kentucky Fried, Ltd.	Canada	759 KFC outlets
Pillsbury Co.	Fraser Valley Foods Jim Pattison Group	Canada	Frzn., canned veg.; fish & chips; fruit
RJR Nabisco	InterBake Foods Ltd.	Canada	Cookies, crackers
	Iracema Ind. de Caju	Brazil	Cashews
Sara Lee Corp.	Food/consumer group of Akzo NV and Royal Dutch Shell	Netherlands	—
Paul Soulier	Union Enterprises	Canada	Frozen foods
Pilgrim's Pride	3 process plants	Mexico	Poultry
W.R. Grace Co.	S&W Berisford PLC	U.K.	Prepared foods

*For U.S. foreign acquisitions 1984-86, see *Food Engineering*, Jan., 1987

Source: The Food Institute

iffs are very little incentive to foreign investment.

William V. Janis, an economist who tracks the food processing industries at the U.S. Department of Commerce (DOC), agrees and doesn't see any big scramble to Europe by firms not already operating there. "What's the universe of U.S. food processors who are likely candidates for first-time investment in Western Europe?" Janis asks. "The wave of big mergers and acquisitions here has eliminated most potential candidates."

Global opportunities

What spurs U.S. food processors to invest abroad? Sources queried by *Food Engineering* cite several factors:

1.) The mature U.S. market and perceived market opportunities abroad. Says USDA's Chuck Handy: "You either have to take market share from competition here, expand in

Foreign investment in U.S. food industry surpassed U.S. investment in the food industry abroad in 1984 and by 1987 exceeded U.S. investment abroad by $3.36 billion. But U.S. firms earned a far better return on their overseas investments, generating 1987 income of $2.78 billion vs. $878 million for foreign companies operating here. Even after deducting capital gains due to currency translations, income for U.S. firms in 1987 totaled $1.96 billion. (Source: U.S. Dept. of Commerce)

U.S. investment in foreign food industry versus foreign investment in U.S. food industry
(Millions of dollars)

United States:	1983	1984	1985	1986	1987
Direct investment position:	7,661	8,156	9,252	10,968	12,643
Capital outflow:	25	478	1,196	1,469	1,630
Income:	676	683	1,619	2,091	2,784
Foreign:	**1983**	**1984**	**1985**	**1986**	**1987**
Direct investment position:	7,447	8,270	10,710	12,147	16,004
Capital outflow:	798	818	2,538	1,337	3,832
Income:	553	726	441	797	878

Source: U.S. Dept. of Commerce

International operations of Borden Co., which acquired 58 companies here and abroad since early '86, include the 59-store Stefansback retail bakery chain operated by the Kuntzle Group in West Germany. (Photo: Borden, Inc.)

another product area, or expand abroad." The population growth in the United States is only 1-2 percent per year, notes Purdue's John Connor, who produced the recent report *Food Processing: An Industrial Powerhouse In Transition* for the Institute of Food Technologists. Newly-industrialized countries such as Brazil, Mexico, Nigeria and those on the Pacific Rim have fast-growing middle classes looking for convenience foods to replace scarce kitchen labor. "One sure measure of national development is when you can't get a maid any longer," says Connor.

2.) To diversify assets and therefore spread risk, "like managing an investment portfolio," says Connor. This includes diversifying risks in currency translations.

3.) To diversify raw-material sources. "If you were getting vegetables from Wisconsin during the summer of '88 you were in trouble," notes Jeff P. Muchow, vice president of Food System Associates, a Washington, D.C. management consultant to food processors. Companies such as Campbell Soup, Pillsbury and General Foods have invested in South and Central American farms and food plants to take advantage of lower labor and raw-material costs. Pillsbury, for example, sources shrimp for both its food-service operations and *Today's Catch* retail brand from Taiwan and Ecuador. "Expanding our operation to supply others outside the Pillsbury group represents a good business opportunity," says David Mesley, director of imports for Pillsbury's International Trading Group.

4.) Competitive advantages. "Foreign markets are less competitive," observes DOC's Bill Janis, ranking English-speaking markets such as Canada and Australia as most competitive for U.S. products to Pacific Rim markets as least competitive. This offers American food processors greater returns from their marketing expertise. Foreign customers want well-advertised brand names and convenience foods "even in China," adds James F. Azumano, president of the international food consulting firm K-Pac International in Eugene, OR. But cultural influences will determine what's going to sell, he cautions.

5.) Enlightened governments, more receptive today to partnerships with private firms to create jobs and gain access to Western technology. But cheap labor isn't a major motive for food processors to locate abroad, says Muchow: Automated food plants don't use much labor.

6.) Improving economies and political stability in the Third World, coupled with declining world tensions. Nationalization of industry has been rare, John Connor points out, occurring mainly in Cuba and in the East Bloc after WWII. Industries that have been nationalized tend to be raw-material

industries such as petroleum, mining and agriculture, not manufacturing.

7.) Pressure from foreign competition, says Mickey Kupperman of Epstein, noting for example that Britain's Marks & Spencer—renowned for its high-quality fresh and prepared foods—is entering the U.S. market. "There's a growing awareness of the global economy, from the standpoints of price, new technology and product quality—an *overwhelming* focus on quality."

Six basic strategies

Food firms can apply several alternative strategies to enter foreign markets, said USDA's Chuck Handy at the Houston conference. He ranked six basic strategies according to degree of investment required. The first three relate mainly to exports, the final three to direct investment.

Most firms enter the export market for the first time through *foreign agents or brokers*, Handy explained. As export sales increase, they can set up an *export office or export division* within their U.S. company. Another route could be to *contract production* to a foreign packer, much as they would employ a co-packer in the domestic market.

Although *licensing* requires no direct investment in production facilities, considerable investment is needed to identify possible licensees, develop production and marketing procedures and establish quality controls, said Handy.

Joint ventures allow the American firm to tap into the production, marketing and regulatory know-how of a host-country firm at less cost than acquiring a wholly-owned subsidiary. Finally, a U.S. processor can acquire or build foreign production facilities and operate them as a *wholly-owned subsidiary*. "In actual practice, a firm can use any one or all of these strategies at the same time," said Handy. But the major strategy employed by large U.S. firms is to acquire a regional processor who commands number one or number two market share for his product and build from there, Handy told *FE*.

Planning the project

Factors to consider in the feasibility study for an overseas-plant project, says Kupperman: trade restrictions; product standards and regulatory standards; work rules ("it's more difficult to fire people in foreign countries, for example"); social benefits; planning approvals; environmental issues ("which take on a new dimension in Europe"); raw-material sourcing; distribution costs; energy costs ("higher in Europe"); taxes; solid-waste disposal; land costs ("high in Europe"); construction costs, ("difficult to predict"); and import restrictions (which in Latin America, for example, can limit implementation of new technology).

Alternative strategies to access foreign markets

Source: USDA

You generally don't have much choice in selecting a plant site overseas, says Robert L. Opila, who has managed food plant projects in 28 countries as food group manager for The Austin Co. (Des Plaines, IL). "You're told where to build," says Opila. "Foreign nations have more central planning, not just in the socialist countries but elsewhere in Europe, Asia and Latin America." Labor intensity is a virtue in socialist states. But on a meat plant project in Yugoslavia, Opila recalls, "we were told: 1.) Where to build; 2.) How many people the plant would employ; 3.)That it would process pork. In that order."

Key to planning the foreign project, Opila advises: Determine import restrictions early and find out what you can't do locally. Example: the Heinz baby-food plant at Guangzhou, China, which started-up in 1986. All imports had to be listed—even down to fasteners—so Chinese officials could determine if anything could be supplied locally. Only one stainless-steel fabricator could be located in all of China, at a great distance from the site, so all stainless was fabricated here and exported. "We sent over a giant erector set," Opila recalls. Power availability is a problem in every country, says Opila, so the utility infrastucture must be evaluated early as well. Third World na-

$1 billion or more (10 firms)

Philip Morris (G.F.)	Heinz
Coca Cola	Sara Lee
CPC International	United Brands
RJR Nabisco	Kellogg's
Kraft	Quaker Oats

$500 million or more (7 firms)

Pepsico
Ralston Purina
Castle & Cooke
Campbell Soup
Hershey's
Pillsbury
Borden

Sources: Company annual reports, supplemented by data supplied by individual companies, USDA

tions frequently don't want the latest U.S. process controls but "the technology of the '50s and '60s," Opila observes, "what we would consider antiquated." Labor quality varies widely, as does the quality of local contractors, says Oplia, who rates contractors from generally "good" in Europe to "fair" in Latin America, "a disaster" in China and "impossible" in India. "Even the best European contractors would be only average in the U.S.," he added. Rule of thumb for the foreign project, says Opila: "Don't assume anything. Check into everything."

Johnny W. Gibson, director of international food projects for Fluor Daniel (Greenville, SC), has managed several Chinese food-plant projects and cites communications as a key problem. Gibson's solution: Chinese-American supervisors who speak the language. Gibson concurs on the importance of defining what materials and equipment can be supplied locally, what must be imported. "The joint-venture partner should supply what he can," says Gibson. "Most process equipment is U.S. technology and must be imported, as well as anything unique such as stainless steel piping and valves. Some refrigeration, air-conditioning and electrical equipment can be supplied locally, and the quality is OK." Drawings must be completely detailed, "even down to cove moldings." Construction brigades require close supervision on site, and plant operators need a lot of training, especially in automation devices such as PLCs. "It's not cheaper to build a plant in China," says Gibson. "Labor is cheaper, but you have higher management and transportation costs, including the cost of transporting your own people. Capital investment is no less than it is in the U.S. So you must justify a project in China on a business basis, not a cost basis. But patience, persistence and training will pay off."

Middle Eastern governments—especially Saudi Arabia—also want you to purchase construction materials locally, reports Lenny Bruce, project manager at the Atlanta office of Lockwood Greene Engineers. "You must justify to local authorities whatever you have to import," says Bruce. Result: "You build mainly of concrete. But concrete and hot weather don't work well together, so you have to be sensitive to this." Dust in the desert "is like talc," he adds, so air-filtration systems are critical to food-plant design. Water is scarce, so plants must be designed to minimize water for processing, sanitizing and washdown. Saudi contractors hire a lot of Third World labor who all generally speak English but precise communications are important. Engineering drawings must be more detailed than for a U.S. project, Bruce adds, but local engineers will re-work your drawings and re-submit them for approval.

The plant as competitive strategy

Successful companies in today's global marketplace "are those who can stay agile, who can marry technology to marketing skills to stay on the leading edge," says Mickey Kupperman of Epstein. "Once this meant companies able to cope with change, but survival now means those who *thrive* on change. Product life cycles can be very short."

Kupperman wonders if the recent wave of giant mergers and acquisitions will create companies more agile or more sluggish. "It gives them more resources, certainly," he observes. "With a light touch on the wheel, they can create opportunities." The ideal: "A lean, hungry, strong competitor with deep pockets."

Because the companies who survive will thrive on uncertainty, "the plants we design should be 'how-should-I-know?' plants—flexible and designed for what we can foresee, yes, but with the ability to bring new products to market quickly, efficiently and of high quality.

"We're getting away from designing buildings," Kupperman concludes. "We're now designing competitive tools—we're designing plants as competitive strategies."

FACING AN UPHILL BATTLE

Once the backbone of most food packaging, glass, metal, and paperboard containers are facing constant erosion from the plastic sector. The containers should survive the erosion but the fight will be difficult.

Are the old standbys of packaging—glass, metal, and paperboard—facing death and destruction? Why the question you ask? Because right now, the "traditional" rigid container market is in a fight for its life. The main predator of these markets has been the plastics industry. There is no doubt that glass, metal, and paperboard are in a survival game in today's packaging market.

For openers, take a look at glass. This segment is being hit hard by plastics. Even now, plastic has invaded the glass industry's long standing territory in several consumer food areas. Procter & Gamble's *Jif* peanut butter is currently being marketed in PET jars, as well as *Folger's* instant coffee. Market gurus estimate that PET containers account for approximately 15 percent of the container market previously supplied by glass.

With the relentless attack by plastic on glass and metal, one has to wonder why these packaging forms are still being used. There are several reasons, but the emphasis usually is cost and consumer preference. Glass has been preferred by consumers over many years. It is clear and lets you "see" a food product before it is purchased. It has usually been economical to both consumers and manufacturers. And sometimes there is just no replacement for a container that can withstand heat and retorting.

Metal cans, too, have been around for a long time for many of the same reasons. Cans provide economical packaging for manufacturers and relatively long shelf lives for products. With new advances in steel plating, cans are becoming lighter in weight and more easily transported as well. One bonus of the metal industry is that manufacturers never had to worry about the addition of tamper-evident seals: The metal can provides its own.

Another "traditional" packaging container, paperboard, is also familiar to consumers and has turned into somewhat of a workhorse for the dual ovenable sector. Thanks to the microwave, paperboard is enjoying

This photo shows the manufacture of glass on a production line. (Source: Glass Packaging Institute.)

MARGIE J. RUSSELL
Technical Editor

new life since it became the answer to a manufacturer's problem on how to package a product for both the conventional oven and the microwave. The dual ovenable market has enjoyed great success due to the inherent properties of the paperboard container.

Glass under seige?

How tough is the survival game going to be for traditional packaging materials? Pretty tough according to industry spokesmen.

According to the U.S. Department of Commerce, the glass industry is expected to grow at an average constant-dollar rate of three percent annually during the 1988-93 period. For 1988, the agency forecasts an increase to 162 million gross units of glass shipments for food and beverage containers.

Overall, the end-use markets for glass will become more concentrated because of declines in the general packaging sector. Glass packaging in specific end-use markets will be limited to products that require a container with the traditional properties of glass: image, visibility of the product and high moisture and oxygen barriers. Some of these products, industry sources and manufacturers claim, will remain in glass for a long time, according to Edward Schollmeyer, Paine Webber Inc., New York, NY.

For example, mayonnaise is a product that historically has always been packed in glass. Glass, for this product, provides all the properties a manufacturer requires: clarity, economy, and consumer preference. Several companies have studied the possibility of a conversion to plastic for mayonnaise products but felt that plastic just would not do the job.

Baby food and juice products are another category of products which retain glass as the container of choice by a large margin. Glass is a cost-effective container in this industry. A changeover might mean substantial losses: Many plastic containers cost twice as much as identical glass ones.

Studies show that wine is sold almost exclusively in glass bottles. The glass industry is also at the mercy of the product since a large majority of wines are packed in green bottles. A plastic bottle providing the long shelf life needed by wines is not yet available but there are some plastic bottles which can provide average barrier properties for quick-moving products. Interestingly enough, wine coolers represent a major end-use mar-

The resurgence and promise of glass

Customers and consumers have come home to glass packaging. The glass container industry has seen a resurgence in recent years. The reasons are many, but much of the growth can be attributed to environmental concerns, the increasing use of microwave ovens, and lighter and more durable glass containers.

Traditionally, food packaging engineers and processors follow a multi-dimensional approach to packaging decisions. Factors such as product development, manufacturing, and marketing are never far from the minds of engineers. But until recently, the focus has been the "pre-consumer" phase of a product's life. "Post-consumer" thinking extended only as far as the nearest landfill. Our "throw-away" society demanded disposability, and industry responded.

The eighties decade, however, has ushered in an entirely new sensibility. Environmental concerns are leading to increasing public demand for recyclable packaging. As a result, packaging professionals are looking more closely than ever at the post-consumer end of the packaging spectrum.

With the dawn of our national solid waste crisis, Americans are discovering the limits of landfilling and incineration. Regulation and citizen opposition make both of these options problematic. The remaining leg of the solid waste management triad—recycling—is gaining general acceptance as the preferred first line of attack in the war on solid waste.

Recycling, of course, is not a new practice. The glass industry, for one, has supported recycling efforts for several years. The growing garbage crisis, however, has spurred on this renaissance of recycling in two critical ways. Both deserve notice—and respect.

- Recycling and public policy.

Government, at every level, is getting involved. Almost half of all states in the U.S. enacted some form of solid waste legislation in 1988. Several of these state laws establish comprehensive solid waste management plans and goal-oriented recycling programs. Five states now mandate source separation of recyclable materials (such as glass, aluminum and newspapers) from household garbage. More than 600 U.S. communities have curbside collection and recycling programs in place. Meanwhile, legislatures in 33 states considered restrictions on certain non-recyclable packaging during the past year.

At the federal level, the U.S. Environmental Protection Agency recently set a national target of reducing the solid waste stream by 25 percent through recycling.

- Recycling and public opinion.

A recent Gallup poll commissioned by the Glass Packaging Institute found that Americans are willing and ready to help recycling efforts. In fact, more than 50 percent of those polled said they would change their purchasing habits to buy foods and beverages

ket for glass and appear to be one of the fastest growing beverage products in the U.S.

The glass sector has also been affected by the number of mergers and buy-outs in the packaging industry. Anchor Glass acquired Midland Glass and recently merged with Diamond-Bathurst creating outstanding debt. Owens-Illinois acquired Brockway Inc. and increased its debt as well.

What does all this mean to the packaging industry? It undoubtedly points to higher prices for glass containers, the only viable way the merging companies can cope with their debt. But, pressure will come from manufacturers to keep glass prices competitive. If glass prices rise too much, processors may be forced to look at other options, namely plastics.

Yet, the glass industry is emphasizing lighter products and a variety of shapes for its containers. Owens-Illinois, Inc., which merged with Brockway, Inc. and is now doing business as Owens-Brockway, Toledo, OH, offers its line of products for glass packaging. The company thinks that glass provides a quality image, consumers prefer it over other types of packaging, and consumers like the easy opening features of glass.

The company has several lines of glass containers available for the industry including a line of glass for the single-serve juice market. This appears to be a fairly rapid-growth market and glass containers provide visibility and recloseability. The single service glass bottles are available in a variety of sizes: 16 ounce, 10 ounce, eight ounce, and six ounce.

Val-U-Coat bleached paperboard from International Paper supplies the packaging for California Pizza, a line of gourmet frozen pizza from the Wolfgang Puck Food Company. (Source: International Paper.)

seems to be direct correlation between a package's recyclability and its desirability in the eyes of consumers—a correlation that should become more pronounced in the future.

The importance of this statistic becomes apparent when compared to another study conducted by the Food Marketing Institute. According to the FMI poll, more than half the supermarket buyers surveyed said they use customer feedback in their new product buying criteria. Consumers who support recycling are growing in number and volume.

When consumers look for recyclable containers, they choose glass frequently. The Gallup poll found that 73 percent of survey participants knew already that glass is 100 percent recyclable. Recycling-conscious consumers translate into added marketing strength for glass packaging.

Another area of market growth for glass is in the microwave category. More than 43 million times each day, Americans turn on their microwave ovens to prepare everything from snacks and entrees to sauces and desserts. Estimates are that more than 90 percent of American households will include a microwave by the year 2000.

One recent study by National Family Opinion found that consumers prefer glass over all other microwaveable packaging. Glass is perfect for the microwave. Among its advantages:

- Heat and serve convenience—consumers can heat, serve, reseal, and reheat their food product in a glass container.
- Microwave compatibility—glass is "microwave-friendly." It does not react chemically with or change the taste of food during the cooking process.
- Clarity—glass allows customers to view the product before, during, and after the cooking process.
- Premium image—the reputation enjoyed by glass packaging makes it even more attractive to the upscale consumer of convenience food products.

The glass industry has worked to support the innate marketing qualities of glass with some exciting innovations. Production techniques, such as those which led to lighter weight, more durable designs, and new product shapes are key to the success of glass packaging. Refinements in press-and-blow technology have enabled wide-mouth and narrow-neck containers to better meet the needs of today's food and beverage customers.

Together, the growing influence of recycling, microwave cooking, and new designs and production techniques add up to a promising future for glass packaging.

Lewis D. Andrews, Jr. is president of The Glass Packaging Institute, a Washington, D.C. based trade association representing the glass container industry. The industry supports numerous programs and activities to promote recycling in 22 states and the District of Columbia.

Trends and forecasts: sanitary food containers
(in millions of dollars except as noted)

Item	1985	1986[1]	1987[2]	1988[3]	Percent Change: Compound Annual 1972-85	Compound Annual 1980-85	Annual 1985-86	Annual 1986-87	Annual 1987-88
Product data									
Value of shipments[4]	2,853	3,013	3,222	—	5.7	3.6	5.6	6.9	—
Value of shipments (1982$)	2,621	2,700	2,754	2,809	-1.9	-1.7	3.0	2.0	2.0
Shipments price index[5] (1982=100)	109.1	111.8	117.2	—	7.7	5.4	2.5	4.8	—
Trade Data									
Value of imports (ITA)[6]	13.3	13.4	17.7	21.2	—	18.9	0.8	32.1	19.8
Import new supply ratio[7]	0.005	0.004	0.005	—	—	20.1	-20.0	25.0	—
Value of exports	48.4	37.4	46.0	55.5	10.4	-5.4	-22.7	23.0	20.7
Export shipments ratio	0.017	0.012	0.014	—	4.2	-8.8	-29.4	16.7	—

[1]Estimated except for exports and imports.
[2]Estimated.
[3]Forecast.
[4]Value of products classified in the Sanitary Food Containers industry produced by all industries.
[5]Developed by the Office of Industry Assessment, ITA.
[6]Import data are developed by the chapter author.
[7]New supply is the sum of product shipments plus imports.

Source: U.S. Department of Commerce. U.S. Industrial Outlook, 1988.

The metal market

The metal can market appears to be holding its own in fighting for a share of the container industry. As reported in *FE's Packaging Status Update* (Oct. '88), the steel can appears to be enjoying a resurgence. Steel cans remain an option for packagers when prices of other types of containers rise. And steel manufacturing has improved so much over the years that the consumer is receiving a better, lighter-weight can. More importantly, cost reductions in steel cans have never shown a reduction in performance.

Like the glass container industry, the metal can industry is expected to grow an average annual rate of three percent, measured in constant dollars during the 1988-93 period, according to the U.S. Department of Commerce. This growth figure is affected by demands in the major end-use markets for metal cans: beer, soft drinks, and food packaging.

An increase in soft drink consumption is seen as one of the main growth end-use markets for metal cans. Consumption increases are seen as part of the diet consciousness of the consumer who will drive up sales of diet sodas significantly. In an interesting strategy by the beverage companies, soda is also being marketed as a breakfast beverage as well. And, lite beer consumption is also predicted to increase as part of the diet trend.

Juice and food packaging as other end-use markets of metal cans will see increases as providing convenience products to consumers. Can packagers will be emphasizing the single-serving serving trend as well as providing products for the health conscious: low fat, low salt, low cholesterol.

Aluminum has shown excellent growth over the last 10 years and is expected to grow moderately into the next decade. The main end-use markets for aluminum are of course beverages—which will continue to rise in consumption—juices, and some baby foods. The aluminum sector's growth will also be spurred on when the market finally reaps the benefits of its recycling efforts over the past few years. Interestingly enough, plastics do not threaten the aluminum market as much as steel because plastics deal with many multi-purpose markets which aluminum does not serve.

Reynolds Metals Company, Richmond, VA, a major aluminum can manufacturer, predicts continued strong growth for this market into the next decade. Shipments of the drawn-and-ironed aluminum beverage can are expected to show continued growth during the package's 25th anniversary year. The drawn-and-ironed can revolutionized the beverage can industry due to its light weight, line speed efficiencies, and environmental soundness.

Reynolds Metals also emphasizes the structural integrity of its products. The company feels that much technology is going on behind the can such as continuous lightweighting. These improvements are often never seen by the consumer.

Aluminum beverage can shipments are predicted to reach 79 billion units in 1988,

These statistics represent trends and forecasts for the sanitary food container sector of the food packaging industry. (Source: U.S. Industrial Outlook, 1988.)

The drawn-and-ironed aluminum beverage can has undergone significant design changes from the first cans of the 1960s through the modern cans of the 1980s. (Source: Reynolds Metals Company.)

an increase of more than six percent over the previous year. The company also reports that the drawn-and-ironed aluminum can held a 96 percent share of the canned beer and soft drink market in 1988.

The paper category

If the market conditions of the glass and metal packaging sectors seem relatively stable, things may not be so rosy for the paperboard sector. Currently, tonnage of paperboard is flat and spot shortages are evident. Paperboard prices are the highest in history in the U.S. Because of the weak dollar and high export rates, almost 15 percent of all paperboard shipments are presently going overseas.

Shipments of sanitary food containers, composed mainly of paperboard, are projected to climb at an annual rate of about 2.2 percent, reports the U.S. Department of Commerce. Major end markets for these containers are paperboard milk cartons, aseptic food containers, ovenable paperboard trays and containers, and other types of containers for liquid or oily foods.

Paperboard is now regaining some of its market share that was lost to other packaging forms. One major end-use market is aseptic packaging which has been targeted for dramatic growth in the next decade. The fastest growing segment of this industry is non-refrigerated fruit juices which sold two billion units in 1987 (*FE* Oct. '88).

Without question, paperboard has a bright future in the dual ovenable container market. It provides cooking options to the consumer that no other container can. In addition, container cooking is so important to the paperboard market that this sector might cut into the metal can market. Container cooking is just not possible in a metal can which gives a good advantage to paperboard. The push for fresh packaged foods will probably increase, too, and in all likelihood this spells another growth area for paperboard use.

Keeping in mind the dual ovenable marketing approach for paperboard, take a look at some of the more familiar products that this industry offers. The Ovenable Products Group of Westvaco, Richmond, VA markets a tray-and-lid design product which eliminates outer cartons. The Westvaco Ovenware system can be marketed for a specific product with up to seven colors for superior graphics. A new, on-press finish coat which has the sheen and glow of off-press laminations is now available. A few famous applications of this ovenware are *Stokely's Singles*, *The Budget Gourmet*, and the newest line of *Elegant Entrees*.

Conclusions

Predicting the future for the glass, metal, and paperboard markets is difficult. Economic trends will affect these markets as the amount of disposable income increases and decreases. Demographics will also play a part. Forecasters see a lower growth rate for the population but working women, singles, and single parents will all be growth categories. And, the emphasis on diets and health consciousness will only get bigger.

Will these packaging categories be able to meet the challenge of new product developments? These markets seem to think so. For example, the glass industry will continue to stress the microwaveability of their containers. The aluminum market feels it fills market demands that plastic cannot. The aluminum industry stresses a single-serve market, while plastic stresses multi-serve ones. There is aggressive expansion going on as the aluminum industry is introducing cans for other products besides soft drinks. This sector feels there is a huge potential in the juice market.

The most significant trend to affect the future of these markets has nothing to do with lifestyles or incomes. It has to do with recycling. Industry analysts predict that in the next five years, mandatory recycling will come of age and the result will be an important one: Consumers and the industry will take an entirely different view of the rigid container markets and what they mean to food packaging. If the recycling process maintains a closed system, then the process can attain maximum efficiency and thus assure the rigid container market a reasonably healthy future.

THE U.S.S.R.: HITTING THE HOME RUN

The Soviet food industry seems on the verge of a new revolution. Perestroika will open it more than ever before to Western-style change. But working with the great bear has never been easy.

Last August, Jan Bone, a free-lance technical writer, visited plants in the Soviet Union as part of a People-to-People food processing and packaging delegation hosted by Centrosoyuz, the Central Union of Consumer Cooperative Societies. The delegation was led by Walter L. Clark III, Chapman College professor of food science and former president of the Institute of Food Technologists. This is what Jan Bone observed in the course of her travels:

When you're dealing with the Soviets, everything seems to come out to be "Yes, but...."

That is because many things are changing rapidly. Just as important, however, is the fact that the cultural and business assumptions an American unconsciously makes often become a barrier to understanding what he or she is seeing.

And so, I found myself somewhat perplexed in Kiev last August.

My notes, taken two weeks previously during the seminar at Centrosoyuz' Moscow headquarters, were uncompromisingly specific: "Centrosoyuz has 22,000 enterprises," the interpreter had explained. "Centrosoyuz employs over 3 million people. Centrosoyuz produces 35 percent of the bread made in the entire Soviet Union, 26 percent of beverages, 16 percent of the canned food, and 15 percent of Soviet confectionery products."

Forty years' experience as a journalist told me I had written down exactly what I'd heard.

But when I further questioned the interpreter two weeks later—weeks in which I'd toured two Centrosoyuz cooperative sausage plants, one bakery, one juice factory, one cannery, one state agro-industrial complex, one confectionery factory under construction, five cooperative retail stores and an agricultural market—it became apparent that despite all the facts I had accumulated in the six cities we'd visited, I hadn't *understood*

the Soviet food processing system at all.

I realized then that at the original seminar the Soviets hadn't explained "cooperatives." They didn't feel they had to. They thought I knew.

For example, while Centrosoyuz, whose main emphasis is trade, *does* indeed have 20,000 establishments, it doesn't own them, in the way Americans think of General Motors owning factories. Instead, its food-producing plants and retail stores are owned by the shareholders of various cooperatives.

And Centrosoyuz *does* employ 3.5 million Soviets—but not, as I learned, in the American sense of work for hire. Women stuffing sausage casings in the factory at Podol'sk (sic), near Moscow, aren't Centrosoyuz employees. Instead, they are shareholders in the cooperative who have chosen to work in the food processing plant which this particular cooperative owns and operates.

I discovered that in the U.S.S.R. it is easy to find yourself with notebooks crammed with observations but with few answers. I also discovered that even when you think definitions are clarified, agreed upon, and out of the way—a mandatory first step in dealing with the Soviets—that they may still not be. Hence, the climate of "Yes, but...."

I'm not alone, apparently.

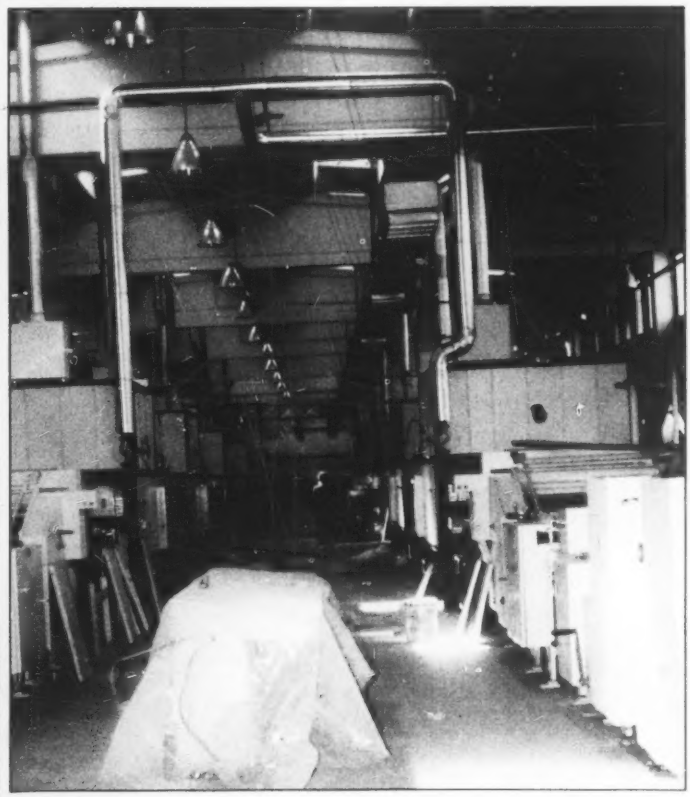
Fritz Friday (Friday Canning Corporation), chairman of the executive committee of the National Food Processors Association (NFPA), says, "It's extremely difficult for Americans and American companies to find out what the Soviets really need."

Friday, who led a delegation of American food processors on a five-day Moscow mission in October, says understanding Soviet problems isn't easy.

"The two systems are so different and know so little about each other, that expanded trade relations and joint ventures in food processing have been impeded by lack of knowledge and accurate information."

That may change, however, because of *perestroika*, Gorbachev's massive attempt to restructure and modernize the Soviet economy and improve the flow of consumer goods to Soviet citizens.

The protocol Friday's group signed in Moscow, worked out with two major Soviet agricultural production agencies and signed by a high-ranking official of the R.S.F.S.R. State Agro-Industrial Committee, is the first step towards a new joint organization to make it easier to transfer information on processed food products and technologies.



A glimpse of the future: confectionery factory under construction, at the Kuban state-run agro-industrial complex in the Krasnodar territory. Approximately 1,100 specialists helped in the construction of this state-of-the-art plant—many of them foreign. In fact, 136 flats (at a cost of 50,000 rubles apiece) were built to house professional specialists from other countries.

Gorbachev's view

Gorbachev acknowledged shortcomings in the Soviet food system at a speech he gave in October 1988 to the Central Committee of the Communist Party, managers of *kolkhozy* (collective farms), *sovkhozy* (loosely, "state farms"), and agro-industrial complexes—a speech in which he suggested changing Soviet law to encourage lease contracts.

Processing, storing, and transporting of food are such urgent problems, he said, that this is where Soviet resources should be directed first.

"If today we had harvested everything which *kolkhozy* and *sovkhozy* produced—had transported, stored, processed it, and delivered it to store counters and consumers— then we would have increased the food supply by at least 25 percent, and by some indicators, even by 40 percent."

Soviet economists have calculated, Gorbachev reported, that capital investment in storage and processing improvements is three to four times more efficient for increasing food supplies than investing in agricultural production.

That's one reason the Soviets are out shopping for equipment. They're using part of the 3 billion DM credit line ($1.7 billion U.S.) gotten last October from West Germa-

ny's Deutsche Bank AG to modernize their food industry.

It is a condition of the loan that it be used to re-equip light industry, and the West Germans will scrutinize the projects to ensure there is no military content.

On the Soviet side, the loan is underwritten by Vneshekonombank, the main finance arm of Soviet foreign trade. The repayment period runs for up to 13 years on market-related terms.

The West German loan is by no means the only one.

Reportedly, Italy is extending credit. And in London, the Moscow Narodny Bank is rumored to be seeking credits of between $1.5 billion and $2.5 billion. A loan from France is under discussion, and the Russians are also thought to be looking towards Japan.

U.S. Department of Agriculture staffer Edward Cook reports the Soviets have said the value of new equipment delivered to their food processing plants in the eight-year time frame of 1988-95 will total 43 billion rubles ($63 billion U.S.).

That's a considerable per annum jump from 2 billion rubles (U.S. $2.9 billion), the value Cook places on food processing equipment deliveries (domestic plus imports) to the Soviets during 1987.

One caveat, however: Though projected expenditures sound appealing to equipment manufacturers, Cook cautions that historically the import share of Soviet expenditures for food processing machinery has been low.

What would the Soviets like to buy?

What technologies do the Soviets need?

Let's look first at a representative (though admittedly random) sample of the sorts of things they already have and are already doing. These, of course, vary widely—partly because of previous constraints on obtaining equipment, and partly because traditionally the Soviets have concentrated on producing and distributing very locally.

•In Pyltsamma, near Tallinn, the apple juice plant run by the Estonian Cooperative Union uses equipment that collects the volatile essences and adds them back to the apple juice for enhanced intensity.

•At the state-run Kuban confectionery factory under construction, the technology compares favorably with the most modern American cookie or cracker plants, according to Dr. Walter L. Clark, who led the U.S. People-to-People delegation.

All the pastry products from this factory will be lapped dough. The conveyor systems are stacked above each other. The dough is allowed to fold itself on the belt below, a technique, Clark notes, that produces flaky pastry because dough and shortening are interspersed time after time.

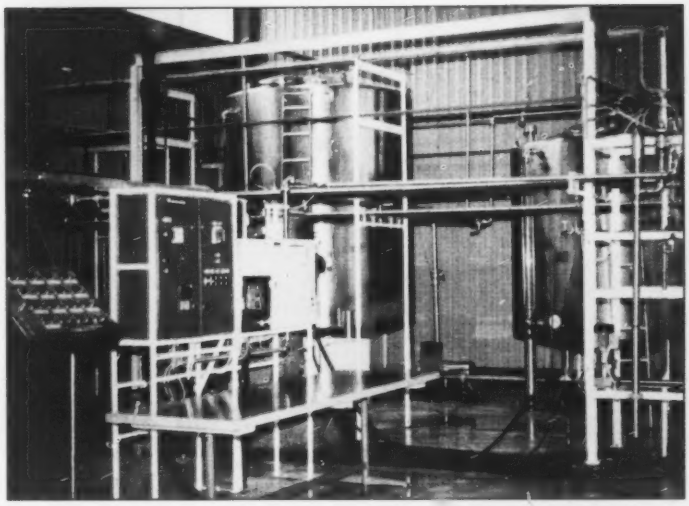
The factory uses a modern pneumatic dry handling system with Italian, German, and Swiss dough mixers and ovens.

•Fritz Friday characterizes the frozen potato plant in Koloss, on the outskirts of Moscow, as state-of-the-art production of potato patties, frozen French fries, and similar products—a European-supplied, turnkey operation.

•Soviet scientists are looking at new technologies. *Centrosoyuz Review*, a monthly magazine, reports that intensive research work has been conducted at the Novosibirsk Institute of Cooperative Trade—research that will help diversify the choice of food products and improve their quality by extensively using local resources.

•Under an agreement between the Institute and the Russian Federation Union of Consumer Societies, staff members of the food commodities department have developed a technology for processing wild-growing berries, such as blueberries and bilberries, without adding sugar. The berries are deep-frozen, or preserved by means of acids and their own salts. This technology is being adopted first in the Tomsk region.

•*Centrosoyuz Review* reports that scientists have developed recipes for new kinds of confectionery, blended juices, and beverages based on wild-growing berries, including viburnum and ashberry, both abundant in Siberia. For example, additives such as ashberry meal or preserved ashberries make it possible to lower the sugar content in confectionery.



A modern apple juice processing plant at Pyltsamma, near Tallinn, uses 8,000 tons of apples per season. Sweden and Switzerland supplied much of the equipment. An adjacent winery, which was mothballed since Gorbachev's cutback on alcoholic beverages, may be back in operation if restrictions are relaxed.

Centrosoyuz: functions and structure

Centrosoyuz (the Central Union of Consumer Cooperative Societies of the U.S.S.R.) is a 90-year-old organization that includes 60.1 million shareholders; 7,123 consumer societies; and 888 district consumer unions.

It is responsible for management of cooperative production units, including agricultural and handicraft items and imports of items related to the cooperatives' activities. It was previously permitted to establish direct business links with other countries, but was not allowed to purchase food processing equipment, which was only done by the state.

However, since the passage of a July 1988 law on cooperatives, Centrosoyuz can purchase food processing machinery and equipment from foreign suppliers.

The Centrosoyuz food industry sector receives its major technological support from state research organizations; utilizes the recommendations of the State Nutrition Institute; orders equipment mostly at state enterprises; and practices quality control in accordance with state standards and state sanitary inspection guidelines. The food industry sector of GOSAGROPROM (see sidebar on U.S.S.R. agencies) cooperates similarly with the state.

The individual cooperatives that make up Centrosoyuz are "traditional" cooperatives, taxed at 35 percent of profits. Joining a consumer cooperative requires purchasing a share, costing from 25 to 50 rubles. This is a one-time "entrance fee." Then members pay an annual fee of between 10 and 25 rubles. Dividends from these cooperatives are often pooled for "social projects," rather than being returned in cash to the cooperatives' shareholders.

Consumer cooperatives are governed by elected boards of directors, usually from 5 to 7 people, who make day-to-day decisions. They also elect representatives to district cooperatives and regional cooperatives.

Centrosoyuz is very active in food production, the main goal of which is to supply its shops with its own products. It also exports through V/O Sojuzkoopvnestorg, a cooperative foreign trade association. Its main food export items include dried, fresh, canned, and cured vegetables; fresh and dehydrated fruits; cultivated and wild nuts, mushrooms and berries; and honey and various beehive agricultural produce.

The 1987 value of Centrosoyuz's food production was 4.5 billion rubles. Centrosoyuz produces 35 percent of Soviet bread, 26 percent of all beverages, 16 percent of canned food, and 15 percent of confectionery.

The Novosibirsk Institute is also researching changes in mushroom processing. Currently, mushrooms are salted and kept in wooden kegs, making them difficult to ship and sell. A new technology of pickling mushrooms in glass jars keeps palatability high.

These developments are all part of the good news. In many food processing plants, however, technology lags considerably behind Western standards. The recently-released U.S. Department of Commerce study ("Profile of the Market for Food Processing and Packaging Machinery in the U.S.S.R.") reports that only about 40 percent of processed food is packed by using mechanized equipment. Manual work still prevails, the study says, in many branches of the food processing industry.

The shortage of packaging material is very acute. "In one extreme case, one-third of the Soviet production of canned fruits and vegetables could not be shipped to the retail shops because boxes for packaging were not available," the U.S. Department of Commerce study says.

It is not surprising, therefore, that Friday's group, which was received at the Kremlin by First Deputy Chairman of the U.S.S.R. Council of Ministers and Chairman of GOSAGROPROM U.S.S.R. V.C. Murakhovsky, reports the Soviets are extremely interested in diversifying their packaging technology.

Currently 80 percent of processed products in the U.S.S.R. are packaged in glass.

G. Lozovik, chief of Cinotyr, the department of new technology in industry at Centrosoyuz' research center, puts packaging technology improvements first on his "needs" list to increase the amount and quality of food products Centrosoyuz produces. Also on that list: biotechnology, computerization, and the use of new raw food components, including wild berries.

Joint ventures

Joint ventures, too, should offer new opportunities for American food processing companies. "The Soviets singled out baby food, citrus processing, vegetable processing and freezing technologies," Friday reports.

Getting a project going, however, isn't going to be simple.

George Melnykovich, president of the Food Processing Machinery & Supplies Association (FPM&SA) and a member of the trade mission chaired by Friday, describes a discussion during that group's recent Moscow meeting.

"What joint ventures do you have in mind?" a U.S. delegate asked.

"As an example," said the Soviets, "we have a need for baby food. We could get together with American companies to make baby food. We will provide space, plant, and labor, while you provide technology, machinery, and production know-how. We will take a portion of the output for the Soviet domestic market, and we will give you a portion for export."

"That sounds fine," Melnykovich told *Food Engineering*, "until you look at the baby food market. Telling an American company they'll get their money back in baby food, requiring them to compete in a very tough market, isn't realistic. But it is an opener that can lead to further talks."

Melnykovich says FPM&SA member co-

Peter Mutskil, general manager of the 23 agricultural markets in the greater Kiev area. Consumer cooperatives for the wholesale purchasing of goods and necessities have existed for over 100 years. Lenin (whose picture hangs on the wall behind Mutskil's desk) encouraged their development as a distribution system for food and consumer goods.

panies have been asked to respond to a Soviet RFP (request for proposal) for a facility to process 25,000 tons of apples per season in the Krasnodar territory, east of the Black Sea.

As Melnykovich sees it, American companies who want to work with the Soviets will have to be able to identify what Soviet manufacturing capacity is for specified products. They'll also need to use American marketing expertise to spot opportunities for an equitable ROI in terms of technology and equipment.

Still, while joint ventures with the Soviets are underway (70, or so, of them across various industries), then-U.S. Trade Representative Clayton Yeutter cautioned U.S. companies against unrestrained optimism.

"Gorbachev makes statements about market openings," Yeutter told a Chicago audience in the fall of 1988, "but in fact there's a large difference between rhetoric and reality in the Soviet Union.

"That is a very rigid society. Companies expecting to do business in the Soviet Union better be in it for the long haul and expect lots of trials and tribulations getting their joint ventures underway."

However, Nikolay Pervov, agricultural attache at the Soviet Embassy in Washington, says he knows of eight projects "in very active negotiations to establish joint ventures."

One group of seven American corporations that's been working since spring 1988 to explore joint ventures is the American Trade Consortium (ATC), whose president

Centrosoyuz trade, purveyance, and industrial enterprises

(12-month projections, 1/1/88 through 12/31/88)

Retail operations (000s)	
Trade enterprises	390.0
shops	319.1
floor area (sq.m.)	25,615
shops operating as self-service units	239.3
Public food service enterprises	108.0
number of seats	5,216
Storage (potatoes, vegetables, fruit)	
Total capacity (000s tons)	2,523.4
Refrigerators (000s tons)	1,057.5
Reception and purveyance centers	473,000
Industrial enterprises (000s)	
Total	21.3
bread-baking plants and bakeries	11.5
Production (in units as indicated)	
Main types of products:	
Bread and bakery goods (tons)	11.0 million
Canned food (cans)	1,850 million
Sausage goods (tons)	335,100
Confectionery goods (tons)	183,000
Non-alcoholic beverages (deciliters)	81.9 million
Beer (deciliters)	21.9 million
Processed vegetables (in tons)	248,000
Total consumer goods, food and non-food at retail prices (millions of rubles)	8,313.1
Non-food products	719.1
Agricultural products (raw materials, in 000s tons):	
Potatoes	8,285
Vegetables	6,466
Fruit	1,241
Melons	1,698
Wild fruits and berries	73
Meat (weight after slaughter), including meat products	1,486
Eggs (millions)	7,245

Source: Centrosoyuz

Who's who in the U.S.S.R.

•*GOSAGROPROM*:
Umbrella agency that plans, finances, and supplies all sectors of agro-industry. Currently negotiating with a number of U.S. companies about joint ventures. Interested in various types of cooperation with the U.S.

•*Ministry of Machine Building for the Light and Food Industries and Household Appliances*:
A ministry under GOSAGROPROM, responsible for process machinery manufacture.

•*Defense Ministry*:
USDA staffers feel that in 1988 the Defense Ministry was given greater authority for overseeing the manufacture of processing equipment.

•*Ministry of Trade*:
Responsible for management of food retail stores, restaurants, and cafeterias, including procurement specifications for related equipment.

Centrosoyuz:
See separate sidebars.

•*Ministry of Foreign Trade*:
Directs and oversees Foreign Trade Organizations (FTOs). Responsible for fulfillment of import plans.

•*Foreign Trade Organizations*:
Independent economic organizations. Specialized units of the Ministry of Foreign Trade that purchase foreign products on behalf of end users.

•*TECHMASHIMPORT*:
Responsible for imports of refrigeration equipment.

•*PROMASHIMPORT*:
Responsible for imports of packaging machinery and equipment.

•*TECHNOPROMIMPORT*:
An FTO with responsibility for imports of food machinery and equipment.

•*U.S.S.R. Chamber of Commerce and Industry*:
Works closely with the Ministry of Foreign Trade to organize trade exhibitions in the U.S.S.R..

•*State Committee for Science and Technology*:
An advisory body that is responsible for advising on the selection of foreign suppliers of technology and equipment.

is James H. Giffen, chairman of the Mercator Corporation and president of the U.S.-U.S.S.R. Trade and Economic Council.

Among the corporations: Archer Daniels Midland, with top priority interests in oilseed processing, edible oil refining and the production of starch and sweeteners; and RJR Nabisco, which planned—at least before the buyout—to become actively involved in the production of its tobacco, cracker and biscuit products and cereals, as well as the development of food manufacturing processes with the Soviets.

Giffen notes that the ATC's timetable, (which he says is currently on schedule), calls for a Soviet-U.S. general trade agreement to be signed in January 1989.

"Approximately 20 to 25 joint ventures will be concluded anywhere from 30 days to 180 days after that date," Giffen says. "We expect plants to be constructed and operational within one to two years after the conclusion of the joint venture agreement."

Giffen characterizes negotiations as "cordial, business-like, and productive."

Terms of the ATC's proposed joint ventures haven't been released, which isn't surprising, since the joint venture agreement still is being negotiated.

But terms of one new food-related joint venture have been reported by *Centrosoyuz Review*.

In May of 1988, the Lebanese firm Dris, the Cooperative Food Industry Department, and Soyuzkoopvneshtorg (the Centrosoyuz cooperative association for external economic ties) signed a protocol on plans to establish a Soviet-Lebanese joint enterprise to produce tinned goods. The venture will take shape in Soviet Armenia or the Crimean region of the Ukraine.

Soviet participants will have not less than a 51 percent share in the authorized investment, and the foreign partner will have not more than a 49 percent share.

Under the agreement reached, the Soviets will provide a plot of land and the right to use it; energy resources; raw materials and circulating assets in rubles and foreign currency; and engineering facilities and piping—with a list of these requirements to be determined during technical and commercial talks.

The Lebanese partners will provide various technological, crating and cold-storage equipment; and will work out the details for furniture, tools, automatic devices and spare parts. The Lebanese will design, plan and create specifications for the venture, "with due account for high economic efficiency"; will study world market demand to determine the appropriate level of output for the joint venture; and will contribute part of the circulating assets in foreign currency.

The foreign currency dilemma

The new economic climate that Gorbachev is championing and the broadening of trade he envisions should lead to more opportuni-

ties for American manufacturers.

If, that is, some of the financial issues can be resolved.

One message from the Soviets came across loud and clear, according to Melnykovich: "The Japanese, the West Germans, and Western Europeans in general are very interested in our business. You Americans aren't the only game in town."

Although the U.S. Department of Commerce supports more trade with the Soviet Union, Melnykovich says, the Jackson-Vanek amendment, intended to pressure the Soviets into increasing Jewish immigration, prohibits favored country status for the Soviet Union – a situation he sees as inhibiting trade, since guaranteed loans and similar programs are not available to the Soviets.

Melnykovich is eager to see how the Bush administration will respond to these issues.

A crucial problem for food processing companies and equipment manufacturers: the Soviets' limited supply of hard currency, and the fierce competition for it among Soviet government agencies.

As a result, the need for products with export value may drive product development priorities, Melnykovich says. "The Soviets will be looking to develop products that satisfy domestic needs, while still having some excess capacity for working with trading partners, using that excess to capture hard currency."

Since the ruble isn't freely convertible, the volume of centrally-planned imports of food processing/packaging equipment also depends largely on Soviet hard currency revenues. These, in turn, are influenced by the world oil market, the downturn in gold, and by Soviet expenditures required to import grain.

Barter is one answer to the currency problem, but new ones may be needed. "If you can't get your money out of a joint venture, what good is a joint venture?" asks NFPA's Friday.

Melnykovich is hopeful, however, that creative solutions can be worked out. "Once you get the Soviets talking, even if it's about baby food, you can look at something more marketable," he says – "something in which we can get a fair ROI. Maybe joint ventures will have to be created in an economic zone that isn't the free enterprise system, or the Soviet Communist system, but which is something in between."

New economics

If the currency situation can be worked out, there's plenty of opportunity for non-Soviet companies to sell to the state, collectives, and consumer cooperatives.

In processing machinery, the potential for sales as the Soviets modernize certain of their plants is substantial. For instance, Dmitrii A. Yesipenko, GOSAGROPROM board member who heads its Department of Collective Farms, says collective farms own 900 processing shops and canning plants. They manufacture 770 million cans of products.

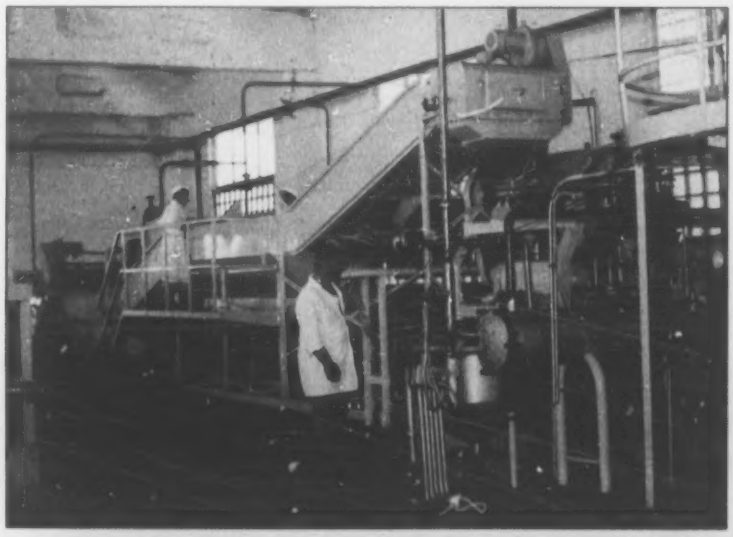
In terms of money, he reports, collective farms' capital funds exceed 170 billion rubles.

"The new economic mechanism which is being introduced nowadays, together with the law on cooperatives in the U.S.S.R. and model rules of a collective farm, grants collective farms broad rights to carry out their business operations independently, including cooperation with foreign partners," Yesipenko says. "These measures are called upon to drastically change the socio-economic status of the agricultural sector of the country."

Perestroika is also changing consumer cooperatives. "Many features characteristic of cooperatives fully meet the interests of *perestroika*," says Centrosoyuz Vice Chairman Nikolai Lupei. The flexibility of cooperatives gives them an advantage in helping to satisfy the population's requirements for foodstuffs.

New approaches to organizing trade services and food service operations in rural areas call for the setting up of an extensive network of complex purchasing and processing enterprises in the countryside in the next few years.

Obviously, this Soviet trend of shifting food processing into the agricultur-



Tomatoes are washed, sorted, and travel up a conveyor belt for processing in Kaspi, near Tbilisi, 160 kilometers north of the Turkish border. This is one of five cooperative canning factories in the Republic of Georgia. People-to-People's delegation of food processing and packaging specialists were the first Americans ever to visit the town.

For further information....

Government

•"Assessment of the Soviet Food Program." For ordering information, contact Economic Research Service, U.S. Department of Agriculture, 1301 New York Avenue NW, Washington DC 20005-4788 (202-786-1620).

•"Situation and Outlook Series: U.S.S.R. Agriculture and Trade Report." Annual subscriptions and single copies are available from the Superintendent of Documents, U.S. Government Printing Office (GPO), Washington DC 20402. For prices and ordering information, call GPO order desk, 202-783-3238.

•"U.S.S.R. Agriculture and Trade Report." Summaries and full reports, including tables, are available electronically through USDA's EDI system. For details, call 202-447-5505.

•A newly-released 163-page study for the U.S. Department of Commerce is available for purchase. The study contains tables, general industry data and trends, and profiles of various industry sectors. All four sections of the extensive study on U.S.S.R. Food Processing and Packaging (IMR 8705) are available at district and branch offices of the Department of Commerce, using the Commercial and Information Management System.

Private sector

For information on the new clearinghouse being established for information on science and research joint venture opportunities, and export/import arrangements related to food production and processing, contact the National Food Processors Association, 1401 New York Avenue NW, Washington, DC 20005 (202-639-5900); or contact the Food Processing Machinery & Supplies Association, 200 Daingerfield Road, Alexandria, VA 22314 (703-684-1080).

At Centrosoyuz headquarters in Moscow, Anatolii A. Fomin (left), deputy head of the Food Processing Department of Centrosoyuz, and Georgii Y. Lozovik, chief of the Department of New Technology in Industry, Centrosoyuz Research Center, examine an American frozen food package.

al regions where foodstuffs are produced – a trend that makes sense, considering the vastness of the country, the logistics of shipping, and the local preferences for ethnic foods – represents opportunity.

In addition, Centrosoyuz plans to increase drastically the buying of agricultural produce and the processing of farm goods.

"We conclude ever-more-long-term contracts with owners of private households, paving the way for guaranteed sales of foods they grow in their gardens," A. Krashennikov, head of Centrosoyuz' International Department, told a Soviet-Scandinavian symposium on cooperatives in September. "This year we have signed over 13 million such contracts."

The future

What's in the offing for the Soviets?

Through the new *glasnost*, or openness, Americans may learn more about Soviet agro-industrial plans at future meetings of the U.S.-U.S.S.R. government-to-government working group representing the food processing industry.

On the Soviet side, Centrosoyuz Board President Deputy P. Fedirko says cooperative purchasing and manufacturing centers are being set up to purchase all farm surpluses, pre-process all product bought on their own premises, and market the output. *Centrosoyuz Review* reports that more than 3,000 centers have been opened. By the end of the current five-year Soviet plan, another 26,000 are to come onstream.

Also ahead: more autonomy for decision-making, as "democratization" enables more Soviet organizations and workers to exert decisive influence on the economic restructuring that is Gorbachev's goal. This, however, may lengthen negotiations for "foreign" companies doing business with the Soviets, as the question of just who has the ultimate decision-making power is being resolved.

One thing's certain: Patience and perseverance are needed. So is creativity. But the opportunities are there.

As Melnykovich puts it, "When you're talking about international trade, basically there are a lot of base hits, but only two home runs: the Soviet Union and the People's Republic of China."

JAN BONE
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An associate member of the Society of Manufacturing Engineers, Jan Bone has an award from the American Political Science Association for distinguished reporting.